Home work #3	Ch 2: 2.1-2.4	Fri, 01/21/05

Ch. 2

Q2:

a) Velocity: in/day; acceleration: in/day^2

b) No. To small unit of distance and to large unit of time

Q9:

Yes, because the direction of the velocity is changed.

Q13:

Yes, because the acceleration is a rate at which velocity changes.

Q18:

a) The velocity is constant in the time interval between 0 and 2 sec, increases between 2 and 4 sec, and decreases between 4 and 8 sec.

b) The greatest acceleration is in the time interval between 2 and 4 seconds because the slope $\Delta v/\Delta t$ is maximal within that interval. Note that Δv is the change of the velocity during change of time Δt.

Q19:

a) Yes, because finally the distance decreases with time.

b) The instantaneous velocity at point A is greater than at point B because the slope $\Delta d/\Delta t$ at point A is larger compared to that at point B.

E2:

The average speed is $v = d/t$ = (1.8 km)/(30 min) =

= (1.8 km)/[(30 min) (1 hour/60 min)] = (1.8 km)/(0.5 hour) = 3.6 km/hour.

E3:

The average speed is $v = d/t$ = (4.8 cm)/(12 days) = 0.4 cm/day

E7:

The distance $d = vt$ = (1.2 m/s) (1 hour)(60 min/hour)(60 s/min) =

= (1.2 m/s)(3600 s) = 4320 m = (4320 m)/(1000 m/km) = 4.32 km.

E8:

a) 25 m/s = (20 m/s) (1/1000 m/km)= 0.025 km/s = $2.5 \cdot 10^{-2}$ km/s

b) $2.5 \cdot 10^{-2}$ km/s = ($2.5 \cdot 10^{-2}$ km/s) (3600 s/hour) = 90 km/hour

CP2:

a) $a = v/t$ = (4 m/s)/(4 s) = 1 m/s^2.

b) $a = \Delta v/\Delta t$ = (12 m/s – 4 m/s)/(8 s – 4 s)= (8 m/s)/(4 s) = 2 m/s^2.

c) $a = \Delta v/\Delta t$ = (12 m/s – 0 m/s)/(8 s – 0 s) = (12 m/s)/(8 s) = 1.5 m/s^2.

d) $a = (a_1 + a_2)/2$ = (1 m/s^2 + 2 m/s^2)/2 = (3 m/s^2)/2 = 1.5 m/s^2.

The answer is YES, because both time intervals are the same: 4 s and 4 s.